



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books

Search Protein for Go Clear

Limits

Preview/Index

History

Clipboard

Details

Display

default

Show: 20

Send to

File

Get Subsequence

Features

☐ 1: NP_002065. guanine nucleotid...[gi:11321585]

BLink, Domains, Links

LOCUS NP_002065 340 aa linear PRI 21-DEC-2003

DEFINITION guanine nucleotide-binding protein, **beta-1** subunit; G protein, beta-1 subunit; transducin beta chain 1; guanine nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 1; beta subunit, signal-transducing proteins GS/GI [Homo sapiens].

ACCESSION NP_002065

VERSION NP_002065.1 GI:11321585

DBSOURCE REFSEQ: accession NM 002074.2

KEYWORDS

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Li,Z., Hannigan,M., Mo,Z., Liu,B., Lu,W., Wu,Y., Smrcka,A.V., Wu,G., Li,L., Liu,M., Huang,C.K. and Wu,D.

TITLE Directional sensing requires G beta gamma-mediated PAK1 and PIX alpha-dependent activation of Cdc42

JOURNAL Cell 114 (2), 215-227 (2003)

PUBMED 12887923

REMARK GeneRIF: Directional sensing requires GNB1-mediated PAK1 and PIX alpha-dependent activation of Cdc42.

REFERENCE 2 (residues 1 to 340)

AUTHORS Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and Lonigro,A.J.

TITLE The role of G protein beta subunits in the release of ATP from human erythrocytes

JOURNAL J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)

PUBMED 12512701

REFERENCE 3 (residues 1 to 340)

AUTHORS Hurowitz,E.H., Melnyk,J.M., Chen,Y.J., Kouros-Mehr,H., Simon,M.I. and Shizuya,H.

TITLE Genomic characterization of the human heterotrimeric G protein alpha, beta, and gamma subunit genes

JOURNAL DNA Res. 7 (2), 111-120 (2000)

PUBMED 10819326

REFERENCE 4 (residues 1 to 340)

AUTHORS Downes,G.B. and Gautam,N.

TITLE The G protein subunit gene families

JOURNAL Genomics 62 (3), 544-552 (1999)

PUBMED 10644457

REFERENCE 5 (residues 1 to 340)

AUTHORS Mattingly,R.R. and Macara,I.G.

TITLE Phosphorylation-dependent activation of the Ras-GRF/CDC25Mm exchange factor by muscarinic receptors and G-protein beta gamma subunits

JOURNAL Nature 382 (6588), 268-272 (1996)

PUBMED 8717044

REFERENCE 6 (residues 1 to 340)

AUTHORS Sondek,J., Bohm,A., Lambright,D.G., Hamm,H.E. and Sigler,P.B.

TITLE Crystal structure of a G-protein beta gamma dimer at 2.1A resolution

JOURNAL Nature 379 (6563), 369-374 (1996)
 PUBMED [8552196](#)
 REMARK Erratum: Nature 379 (6568), 847 (1996)
 REFERENCE 7 (residues 1 to 340)
 AUTHORS Wall,M.A., Coleman,D.E., Lee,E., Iniguez-Lluhi,J.A., Posner,B.A., Gilman,A.G. and Sprang,S.R.
 TITLE The structure of the G protein heterotrimer Gi alpha 1 beta 1 gamma 2
 JOURNAL Cell 83 (6), 1047-1058 (1995)
 PUBMED [8521505](#)
 REFERENCE 8 (residues 1 to 340)
 AUTHORS Levine,M.A., Modi,W.S. and O'Brien,S.J.
 TITLE Chromosomal localization of the genes encoding two forms of the G protein beta polypeptide, beta 1 and beta 3, in man
 JOURNAL Genomics 8 (2), 380-386 (1990)
 PUBMED [1979057](#)
 REFERENCE 9 (residues 1 to 340)
 AUTHORS Codina,J., Stengel,D., Woo,S.L. and Birnbaumer,L.
 TITLE Beta-subunits of the human liver Gs/Gi signal-transducing proteins and those of bovine retinal rod cell transducin are identical
 JOURNAL FEBS Lett. 207 (2), 187-192 (1986)
 PUBMED [3095147](#)
 COMMENT REVIEWED [REFSEQ](#): This record has been curated by NCBI staff. The reference sequence was derived from [BC004186.2](#) and [BC008991.1](#).

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit. These subunits are encoded by families of related genes. This gene encodes a beta subunit. Beta subunits are important regulators of alpha subunits, as well as of certain signal transduction receptors and effectors. This gene uses alternative polyadenylation signals.

FEATURES Location/Qualifiers
 source 1..340
 /organism="Homo sapiens"
 /db_xref="taxon:9606"
 /chromosome="1"
 /map="1p36.33"
 Protein 1..340
 /product="guanine nucleotide-binding protein, beta-1 subunit"
 /note="G protein, beta-1 subunit; transducin beta chain 1; guanine nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 1; beta subunit, signal-transducing proteins GS/GI"
 Region 1..340
 /region_name="G-protein beta subunit [General function prediction only]"
 /note="KOG0286"
 /db_xref="CDD:[18082](#)"
 CDS 1..340
 /gene="GNB1"
 /coded_by="NM_002074.2:333..1355"
 /note="go_component: peripheral plasma membrane protein [goid [0000157](#)] [evidence P];
 go_component: heterotrimeric G-protein complex [goid [0005834](#)] [evidence IEA];
 go_function: heterotrimeric G-protein GTPase, beta-subunit [goid [0000264](#)] [evidence TAS] [pmid 3095147];
 go_function: signal transducer activity [goid [0004871](#)] [evidence IEA];
 go_function: heterotrimeric G-protein GTPase activity [goid [0003927](#)] [evidence TAS];

go_process: acetyl choline receptor signaling, muscarinic
pathway [goid [0007213](#)] [evidence TAS] [pmid 8717044];
go_process: RAS protein signal transduction [goid [0007265](#)]
[evidence TAS] [pmid 8717044];
go_process: signal transduction [goid [0007165](#)] [evidence
TAS] [pmid 8717044]"
/db_xref="GeneID:2782"
/db_xref="LocusID:2782"
/db_xref="MIM:139380"

ORIGIN

```
1 mseldqlrge aeqlnqird arkacadatl sqitnnidpv griqmrtrrt lrghlakiya
61 mhwgtdsrll vsasqdgkli iwsyttnkv haiplrsswv mtcayapsgn yvacggldni
121 csiynlktre gnrvsrela ghtgylsccr flddnqivts sgdtcalwd ietggqtttf
181 tghtgdvmsl slapdtrlfv sgacdasakl wdvregmcrq tftghesdin aicffpngna
241 fatgsddatc rlfdlradqe lmtyshdnii cgitsvsfsk sgrlllagyd dfncnvwdal
301 kdragvlag hdnrvsclgv tddgmavtg swdsflkiwn
```

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books

Search Protein for Go Clear

Limits Preview/Index History Clipboard Details
Display default Show: 20 Send to File Get Subsequence Features☐ 1: NP_005264. guanine nucleotid...[gi:20357529]

BLink, Domains, Links

LOCUS NP_005264 340 aa linear PRI 21-DEC-2003

DEFINITION guanine nucleotide-binding protein, ~~beta-2~~ subunit; G protein, beta-2 subunit; guanine nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 2; signal-transducing guanine nucleotide-binding regulatory protein beta subunit; transducin beta chain 2 [Homo sapiens].

ACCESSION NP_005264

VERSION NP_005264.2 GI:20357529

DBSOURCE REFSEQ: accession NM 005273.2

KEYWORDS

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and Lonigro,A.J.

TITLE The role of G protein beta subunits in the release of ATP from human erythrocytes

JOURNAL J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)

PUBMED 12512701

REFERENCE 2 (residues 1 to 340)

AUTHORS Downes,G.B. and Gautam,N.

TITLE The G protein subunit gene families

JOURNAL Genomics 62 (3), 544-552 (1999)

PUBMED 10644457

REFERENCE 3 (residues 1 to 340)

AUTHORS Kleiderlein,J.J., Nisson,P.E., Jessee,J., Li,W.B., Becker,K.G., Derby,M.L., Ross,C.A. and Margolis,R.L.

TITLE CCG repeats in cDNAs from human brain

JOURNAL Hum. Genet. 103 (6), 666-673 (1998)

PUBMED 9921901

REMARK Erratum: Hum. Genet. 104 (1), 113 (1999)

REFERENCE 4 (residues 1 to 340)

AUTHORS Glockner,G., Scherer,S., Schattevoy,R., Boright,A., Weber,J., Tsui,L.C. and Rosenthal,A.

TITLE Large-scale sequencing of two regions in human chromosome 7q22: analysis of 650 kb of genomic sequence around the EPO and CUTL1 loci reveals 17 genes

JOURNAL Genome Res. 8 (10), 1060-1073 (1998)

PUBMED 9799793

REFERENCE 5 (residues 1 to 340)

AUTHORS Blatt,C., Eversole-Cire,P., Cohn,V.H., Zollman,S., Fournier,R.E., Mohandas,L.T., Nesbitt,M., Lugo,T., Jones,D.T., Reed,R.R. et al.

TITLE Chromosomal localization of genes encoding guanine nucleotide-binding protein subunits in mouse and human

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 85 (20), 7642-7646 (1988)

PUBMED 2902634

REFERENCE 6 (residues 1 to 340)

AUTHORS Gao,B., Gilman,A.G. and Robishaw,J.D.

TITLE A second form of the beta subunit of signal-transducing G proteins

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 84 (17), 6122-6125 (1987)

PUBMED [3114742](#)
REFERENCE 7 (residues 1 to 340)
AUTHORS Fong,H.K., Amatruda,T.T. III, Birren,B.W. and Simon,M.I.
TITLE Distinct forms of the beta subunit of GTP-binding regulatory proteins identified by molecular cloning
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 84 (11), 3792-3796 (1987)
PUBMED [3108879](#)
COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from [BC012348.1](#).
On Apr 30, 2002 this sequence version replaced [gi:4885283](#).

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit. These subunits are encoded by families of related genes. This gene encodes a beta subunit. Beta subunits are important regulators of alpha subunits, as well as of certain signal transduction receptors and effectors. This gene contains a trinucleotide (CCG) repeat length polymorphism in its 5' UTR.

FEATURES Location/Qualifiers
source 1..340
/organism="Homo sapiens"
/db_xref="taxon:9606"
/chromosome="7"
/map="7q22"
Protein 1..340
/product="guanine nucleotide-binding protein, beta-2 subunit"
/note="G protein, beta-2 subunit; guanine nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 2; signal-transducing guanine nucleotide-binding regulatory protein beta subunit; transducin beta chain 2"
Region 18..340
/region_name="G-protein beta subunit [General function prediction only]"
/note="KOG0286"
/db_xref="CDD:18082"
CDS 1..340
/gene="GNB2"
/coded_by="NM_005273.2:259..1281"
/note="go_component: peripheral plasma membrane protein [goid 0000157] [evidence P] [pmid 3114742]; go_component: heterotrimeric G-protein complex [goid 0005834] [evidence IEA]; go_function: heterotrimeric G-protein GTPase, beta-subunit [goid 0000264] [evidence TAS] [pmid 2902634]; go_function: signal transducer activity [goid 0004871] [evidence IEA]; go_function: heterotrimeric G-protein GTPase activity [goid 0003927] [evidence TAS]; go_process: G-protein coupled receptor protein signaling pathway [goid 0007186] [evidence TAS] [pmid 7649993]; go_process: signal transduction [goid 0007165] [evidence IEA]"
/db_xref="GeneID:2783"
/db_xref="LocusID:2783"
/db_xref="MIM:139390"

ORIGIN

1 mseleqlrge aeqlrnqird arkacgdstl tqitagldpv griqmrrrt lrghlakiya
61 mhwgtdsrll vsasqdgkli iwsytnkv haiplrsswv mtcayapsgn fvacggldni
121 csiyslktre gnvrvsrelp ghtgylsccr flldnqiits sgdttcaldw ietgqqtvgf
181 aghsgdvmsl slapdgrtfv sgacdasikl wdvrdsmerq tfighesdin avaffpngya
241 fttgsddatc rlfldradqe llmyshdnii cgitsvafsr sgrlllagyd dfncniwdam

301 kgdragvlag hdnrvsclgv tddgmavatg swdsflkiwn

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books

Search Protein for Go ClearLimits Preview/Index History Clipboard Details
Display default Show: 20 Send to File Get Subsequence Features☐ 1: NP_002066. guanine nucleotid...[gi:4504053]

BLink, Domains, Links

LOCUS NP_002066 340 aa linear PRI 23-AUG-2004

DEFINITION guanine nucleotide-binding protein, ~~beta-3~~ subunit; guanine nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 3; GTP-binding regulatory protein beta-3 chain; transducin beta chain 3; G protein, beta-3 subunit [Homo sapiens].

ACCESSION NP_002066

VERSION NP_002066.1 GI:4504053

DBSOURCE REFSEQ: accession NM_002075.2

KEYWORDS

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Stefan,N., Stumvoll,M., Machicao,F., Koch,M., Haring,H.U. and Fritsche,A.

TITLE C825T polymorphism of the G protein beta3 subunit is associated with obesity but not with insulin sensitivity

JOURNAL Obes. Res. 12 (4), 679-683 (2004)

PUBMED 15090636

REMARK GeneRIF: study concluded that the C825T polymorphism in the G protein beta3 subunit played an important role in the determination of obesity in a German population

REFERENCE 2 (residues 1 to 340)

AUTHORS Holtmann,G., Siffert,W., Haag,S., Mueller,N., Langkafel,M., Senf,W., Zotz,R. and Talley,N.J.

TITLE G-protein beta 3 subunit 825 CC genotype is associated with unexplained (functional) dyspepsia

JOURNAL Gastroenterology 126 (4), 971-979 (2004)

PUBMED 15057736

REMARK GeneRIF: Homozygous GNB3 825C carrier status is associated with unexplained predominantly upper abdominal symptoms.

REFERENCE 3 (residues 1 to 340)

AUTHORS Krippel,P., Langsenlehner,U., Renner,W., Yazdani-Biuki,B., Wolf,G., Wascher,T.C., Paulweber,B. and Samonigg,H.

TITLE The 825C>T polymorphism of the G-protein beta-3 subunit gene (GNB3) and breast cancer

JOURNAL Cancer Lett. 206 (1), 59-62 (2004)

PUBMED 15019160

REMARK GeneRIF: The 825C>T polymorphism of the G-protein beta-3 subunit gene is associated with the development of metastasis in low-grade breast cancer

REFERENCE 4 (residues 1 to 340)

AUTHORS Suwazono,Y., Okubo,Y., Kobayashi,E., Miura,K., Morikawa,Y., Ishizaki,M., Kido,T., Nakagawa,H. and Nogawa,K.

TITLE Lack of association between human G-protein beta3 subunit variant and overweight in Japanese workers

JOURNAL Obes. Res. 12 (1), 4-8 (2004)

PUBMED 14742836

REMARK GeneRIF: study indicated that the G-protein beta3 subunit gene (GNB3) C825T polymorphism is not a significant factor for overweight in Japanese people

- REFERENCE 5 (residues 1 to 340)
AUTHORS Joyce,P.R., Mulder,R.T., Luty,S.E., McKenzie,J.M., Miller,A.L., Rogers,G.R. and Kennedy,M.A.
TITLE Age-dependent antidepressant pharmacogenomics: polymorphisms of the serotonin transporter and G protein beta3 subunit as predictors of response to fluoxetine and nortriptyline
JOURNAL Int J Neuropsychopharmacol 6 (4), 339-346 (2003)
PUBMED [14604448](#)
REMARK GeneRIF: Depressed patients under 25 T allele of G protein beta3 subunit associated with a markedly poorer response to nortriptyline, patients 25 yr or older, the G protein beta3 polymorphisms did not predict antidepressant response
- REFERENCE 6 (residues 1 to 340)
AUTHORS Willeit,M., Praschak-Rieder,N., Zill,P., Neumeister,A., Ackenheil,M., Kasper,S. and Bondy,B.
TITLE C825T polymorphism in the G protein beta3-subunit gene is associated with seasonal affective disorder
JOURNAL Biol. Psychiatry 54 (7), 682-686 (2003)
PUBMED [14512207](#)
REMARK GeneRIF: The G(beta)3 C825T polymorphism was associated with SAD in our study sample. This finding strengthens the evidence for the involvement of G protein-coupled signal transduction in the pathogenesis of affective disorder.
- REFERENCE 7 (residues 1 to 340)
AUTHORS Nuckel,H., Frey,U., Aral,h,N., Durig,J., Duhrsen,U. and Siffert,W.
TITLE The CC genotype of the C825T polymorphism of the G protein beta3 gene (GNB3) is associated with a high relapse rate in patients with chronic lymphocytic leukaemia
JOURNAL Leuk. Lymphoma 44 (10), 1739-1743 (2003)
PUBMED [14692527](#)
REMARK GeneRIF: Polymorphism of the G protein beta3 gene is associated with a high relapse rate in patients with chronic lymphocytic leukaemia
- REFERENCE 8 (residues 1 to 340)
AUTHORS Olszanecka,A., Kawecka-Jaszcz,K., Kuznetsova,T., Stolarz,K., Brand,E., Ryabikov,A., Herrmann,S.M., Nikitin,Y. and Staessen,J.A.
TITLE Ambulatory blood pressure and left ventricular structure and function in relation to the G-protein beta3-subunit polymorphism C825T in White Europeans
JOURNAL J Hum Hypertens 17 (5), 325-332 (2003)
PUBMED [12756405](#)
REMARK GeneRIF: in TT homozygotes of both generations, early left ventricular relaxation was reduced. the observation might be because of the higher systolic pressure associated with the TT genotype.
- REFERENCE 9 (residues 1 to 340)
AUTHORS Naber,C.K., Baumgart,D., Heusch,G., Siffert,W., Oldenburg,O., Huesing,J. and Erbel,R.
TITLE Role of the eNOS Glu298Asp variant on the GNB3825T allele dependent determination of alpha-adrenergic coronary constriction
JOURNAL Pharmacogenetics 13 (5), 279-284 (2003)
PUBMED [12724620](#)
REMARK GeneRIF: The 825T allele of a polymorphism at GNB3 is associated with an enhanced coronary blood flow (CBF) and reduction in response to alpha(2).
- REFERENCE 10 (residues 1 to 340)
AUTHORS Ruiz-Velasco,V. and Ikeda,S.R.
TITLE A splice variant of the G protein beta 3-subunit implicated in disease states does not modulate ion channels
JOURNAL Physiol. Genomics 13 (2), 85-95 (2003)
PUBMED [12595577](#)
REMARK GeneRIF: When expressed in rat sympathetic neurons, human Gbeta3-s (an alternative splice variant of GNB3 with single-nucleotide

- polymorphism C825T) appears to lack channel-modulating activity.
- REFERENCE 11 (residues 1 to 340)
AUTHORS Rosskopf,D., Kielbik,M., Manthey,I., Bilmen,G., Eisenhardt,A. and Siffert,W.
TITLE Characterization of the splice variant Gbeta3v of the human G-protein Gbeta3 subunit
JOURNAL Biochim. Biophys. Acta 1626 (1-3), 33-42 (2003)
PUBMED [12697327](#)
REMARK GeneRIF: Characterization of the splice variant Gbeta3v.
- REFERENCE 12 (residues 1 to 340)
AUTHORS Rosskopf,D., Manthey,I., Habich,C., Kielbik,M., Eisenhardt,A., Nikula,C., Urban,M., Kohnen,S., Graf,E., Ravens,U. and Siffert,W.
TITLE Identification and characterization of G beta 3s2, a novel splice variant of the G-protein beta 3 subunit
JOURNAL Biochem. J. 371 (Pt 1), 223-232 (2003)
PUBMED [12431187](#)
REMARK GeneRIF: these results suggest that G beta 3s2 is a biologically active G beta variant which may play a role in the manifestation of the complex phenotype associated with the 825T-allele.
- REFERENCE 13 (residues 1 to 340)
AUTHORS Brand,E., Wang,J.G., Herrmann,S.M. and Staessen,J.A.
TITLE An epidemiological study of blood pressure and metabolic phenotypes in relation to the Gbeta3 C825T polymorphism
JOURNAL J. Hypertens. 21 (4), 729-737 (2003)
PUBMED [12658019](#)
REMARK GeneRIF: higher blood pressure in TT homozygous men might arise via a metabolic pathway characterized by obesity and insulin resistance as well as via increased peripheral resistance secondary to higher haematocrit.
- REFERENCE 14 (residues 1 to 340)
AUTHORS Saller,B., Nemesszeghy,P., Mann,K., Siffert,W. and Rosskopf,D.
TITLE Glucose and lipid metabolism in young lean normotensive males with the G protein beta3 825T-allele
JOURNAL Eur. J. Med. Res. 8 (3), 91-97 (2003)
PUBMED [12730030](#)
REMARK GeneRIF: The TC-genotype is not associated with a primary defect in insulin secretion or sensitivity suggesting that obesity and hypertension in carriers of 825T do not likely result from primary alterations in glucose and insulin homeostasis
- REFERENCE 15 (residues 1 to 340)
AUTHORS Frey,U.H., Aral,N., Muller,N. and Siffert,W.
TITLE Cooperative effect of GNB3 825C>T and GPIIIa PI(A) polymorphisms in enhanced platelet aggregation
JOURNAL Thromb. Res. 109 (5-6), 279-286 (2003)
PUBMED [12818251](#)
REMARK GeneRIF: Low concentrations of agonists resulted in enhanced platelet aggregation in subjects with the GNB3 CC-genotype compared to carriers of a 825T-allele. Both genetic markers contribute synergistically to increased platelet aggregation.
- REFERENCE 16 (residues 1 to 340)
AUTHORS Exton,M.S., Artz,M., Siffert,W. and Schedlowski,M.
TITLE G protein beta3 subunit 825T allele is associated with depression in young, healthy subjects
JOURNAL Neuroreport 14 (3), 531-533 (2003)
PUBMED [12634518](#)
REMARK GeneRIF: G protein beta3 subunit 825T allele carriers displayed higher levels of depression. G protein beta3 subunit 825T allele is predictive of depressive mood in a young, healthy population.
- REFERENCE 17 (residues 1 to 340)
AUTHORS Wascher,T.C., Paulweber,B., Malaimare,L., Stadlmayr,A., Iglseder,B., Schmoelzer,I. and Renner,W.
TITLE Associations of a human G protein beta3 subunit dimorphism with insulin resistance and carotid atherosclerosis

JOURNAL Stroke 34 (3), 605-609 (2003)
PUBMED [12624279](#)
REMARK GeneRIF: The GNB3 825T allele is associated with reduced insulin sensitivity in men with abdominal-type fat distribution and with more advanced carotid atherosclerosis in middle-aged white men and women

REFERENCE 18 (residues 1 to 340)
AUTHORS von Beckerath,N., Schusterschitz,Y., Koch,W., Griesser,K., Mehilli,J., Gorchakova,O., Schomig,A. and Kastrati,A.
TITLE G protein beta 3 subunit 825T allele carriage and risk of coronary artery disease
JOURNAL Atherosclerosis 167 (1), 135-139 (2003)
PUBMED [12618278](#)
REMARK GeneRIF: GNB3 825T polymorphism is associated with angiographically documented coronary artery disease.

REFERENCE 19 (residues 1 to 340)
AUTHORS Sperling,H., Eisenhardt,A., Virchow,S., Hauck,E., Lenk,S., Porst,H., Stief,C., Wetterauer,U., Rubben,H., Muller,N. and Siffert,W.
TITLE Sildenafil response is influenced by the G protein beta 3 subunit GNB3 C825T polymorphism: a pilot study
JOURNAL J. Urol. 169 (3), 1048-1051 (2003)
PUBMED [12576843](#)
REMARK GeneRIF: association of the G protein beta 3 subunit (GNB3) C825T polymorphism, a determinant of intracellular signal transduction, with the drug response to sildenafil in patients with erectile dysfunction.

REFERENCE 20 (residues 1 to 340)
AUTHORS Shliakhto,E.V., Shwarts,E.I., Sokolova,L.A., Nefedova,Iu.B., Zhukova,A.V., Vinnik,T.A., Tolstova,I.A., Rudomanov,O.G. and Konradi,A.O.
TITLE Association of a polymorphic marker C825T of the beta(3) subunit of G-protein with myocardial hypertrophy in patients with hypertensive disease
JOURNAL Kardiologiia 43 (1), 44-46 (2003)
PUBMED [12891286](#)
REMARK GeneRIF: GNB3 gene is associated with left ventricular hypertrophy in patients with hypertension.

REFERENCE 21 (residues 1 to 340)
AUTHORS Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and Lonigro,A.J.
TITLE The role of G protein beta subunits in the release of ATP from human erythrocytes
JOURNAL J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)
PUBMED [12512701](#)

REFERENCE 22 (residues 1 to 340)
AUTHORS Beige,J., Kreutz,R., Tscherkaschina,I., Scherer,S., Sharma,A.M., Zidek,W. and Offermann,G.
TITLE Matrix analysis for the dissection of interactions of G-protein beta3 subunit C825T genotype, allograft function, and posttransplant hypertension in kidney transplantation
JOURNAL Am. J. Kidney Dis. 40 (6), 1319-1324 (2002)
PUBMED [12460053](#)
REMARK GeneRIF: In transplant recipients who did not lose their graft during the first 3 years after transplantation, the G3-TT genotype contributed to accelerated loss of allograft function by exaggeration of posttransplant hypertension.

REFERENCE 23 (residues 1 to 340)
AUTHORS Masuda,K., Osada,H., Iitsuka,Y., Seki,K. and Sekiya,S.
TITLE Positive association of maternal G protein beta3 subunit 825T allele with reduced head circumference at birth
JOURNAL Pediatr. Res. 52 (5), 687-691 (2002)
PUBMED [12409514](#)

REMARK GeneRIF: There is a positive association of the maternal G protein beta3 subunit 825T allele with reduced head circumference at birth. Expression of this allele in the mother may exert influence on fetal metabolic environment.

REFERENCE 24 (residues 1 to 340)

AUTHORS Wenzel,R.R., Siffert,W., Bruck,H., Philipp,T. and Schafers,R.F.

TITLE Enhanced vasoconstriction to endothelin-1, angiotensin II and noradrenaline in carriers of the GNB3 825T allele in the skin microcirculation

JOURNAL Pharmacogenetics 12 (6), 489-495 (2002)

PUBMED [12172218](#)

REMARK GeneRIF: The GNB3 C825T polymorphism is potentially an attractive pharmacogenetic marker to predict hormone-mediated responses in humans.

REFERENCE 25 (residues 1 to 340)

AUTHORS Dzida,G., Golon-Siekierska,P., Puzniak,A., Sobstyl,J., Bilan,A., Mosiewicz,J. and Hanzlik,J.

TITLE G-protein beta3 subunit gene C825T polymorphism is associated with arterial hypertension in Polish patients with type 2 diabetes mellitus

JOURNAL Med. Sci. Monit. 8 (8), CR597-CR602 (2002)

PUBMED [12165748](#)

REMARK GeneRIF: Data show that the T825 variant of the G-protein beta3 subunit gene (GNB3) was not associated with type 2 diabetes itself, nor with overweight and obesity, but was associated with diabetic hypertension.

REFERENCE 26 (residues 1 to 340)

AUTHORS Poch,E., Giner,V., Gonzalez-Nunez,D., Coll,E., Oriola,J. and de la Sierra,A.

TITLE Association of the G protein beta3 subunit T allele with insulin resistance in essential hypertension

JOURNAL Clin. Exp. Hypertens. 24 (5), 345-353 (2002)

PUBMED [12109775](#)

REMARK GeneRIF: relationship between the 825T allele of GNB3 and insulin resistance in the essential hypertensive patients studied, which seems to be independent of body mass index

REFERENCE 27 (residues 1 to 340)

AUTHORS Serretti,A., Lorenzi,C., Lilli,R., Mandelli,L., Pirovano,A. and Smeraldi,E.

TITLE Pharmacogenetics of lithium prophylaxis in mood disorders: analysis of COMT, MAO-A, and Gbeta3 variants

JOURNAL Am. J. Med. Genet. 114 (4), 370-379 (2002)

PUBMED [11992559](#)

REMARK GeneRIF: possible association between the prophylactic efficacy of lithium in mood disorders and the following gene variants: catechol-O-methyltransferase (COMT) G158A, monoamine oxydase A (MAO-A) 30-bp repeat, G-protein beta 3-subunit (Gbeta3) C825T

REFERENCE 28 (residues 1 to 340)

AUTHORS Shlyakhto,E.V., Shwartz,E.I., Nefedova,Y.B., Zukova,A.V., Vinnic,T.A. and Konrady,A.O.

TITLE Lack of association of G-protein subunit gene C825T polymorphism with left ventricular hypertrophy in essential hypertension

JOURNAL Med. Sci. Monit. 8 (5), CR337-CR340 (2002)

PUBMED [12011775](#)

REMARK GeneRIF: polymorphism in GNB3 does not have a role in left ventricular hypertrophy/hypertension

REFERENCE 29 (residues 1 to 340)

AUTHORS Tabara,Y., Kohara,K. and Miki,T.

TITLE Polymorphisms of genes encoding components of the sympathetic nervous system but not the renin-angiotensin system as risk factors for orthostatic hypotension

JOURNAL J. Hypertens. 20 (4), 651-656 (2002)

PUBMED [11910300](#)

REMARK GeneRIF: Polymorphisms of genes encoding G-protein beta3 subunit as risk factors for orthostatic hypotension.

REFERENCE 30 (residues 1 to 340)

AUTHORS Bondy,B., Baghai,T.C., Zill,P., Bottlender,R., Jaeger,M., Minov,C., Schule,C., Zwanzger,P., Rupprecht,R. and Engel,R.R.

TITLE Combined action of the ACE D- and the G-protein beta3 T-allele in major depression: a possible link to cardiovascular disease?

JOURNAL Mol. Psychiatry 7 (10), 1120-1126 (2002)

PUBMED [12476328](#)

REMARK GeneRIF: combined action of this protein and kininase ii in major depression; may have a link to cardiovascular disease

REFERENCE 31 (residues 1 to 340)

AUTHORS Obineche,E.N., Frossard,P.M. and Bokhari,A.M.

TITLE An association study of five genetic loci and left ventricular hypertrophy amongst Gulf Arabs

JOURNAL Hypertens. Res. 24 (6), 635-639 (2001)

PUBMED [11768721](#)

REMARK GeneRIF: association between left ventricular hypertrophy and the C825T allele of the G-protein beta3 subunit gene in Arabs

REFERENCE 32 (residues 1 to 340)

AUTHORS Roszkopf,D., Busch,S., Manthey,I. and Siffert,W.

TITLE G protein beta 3 gene: structure, promoter, and additional polymorphisms

JOURNAL Hypertension 36 (1), 33-41 (2000)

PUBMED [10904009](#)

REFERENCE 33 (residues 1 to 340)

AUTHORS Downes,G.B. and Gautam,N.

TITLE The G protein subunit gene families

JOURNAL Genomics 62 (3), 544-552 (1999)

PUBMED [10644457](#)

REFERENCE 34 (residues 1 to 340)

AUTHORS Siffert,W., Roszkopf,D., Siffert,G., Busch,S., Moritz,A., Erbel,R., Sharma,A.M., Ritz,E., Wichmann,H.E., Jakobs,K.H. and Horsthemke,B.

TITLE Association of a human G-protein beta3 subunit variant with hypertension

JOURNAL Nat. Genet. 18 (1), 45-48 (1998)

PUBMED [9425898](#)

REFERENCE 35 (residues 1 to 340)

AUTHORS Ansari-Lari,M.A., Shen,Y., Muzny,D.M., Lee,W. and Gibbs,R.A.

TITLE Large-scale sequencing in human chromosome 12p13: experimental and computational gene structure determination

JOURNAL Genome Res. 7 (3), 268-280 (1997)

PUBMED [9074930](#)

REFERENCE 36 (residues 1 to 340)

AUTHORS Ansari-Lari,M.A., Muzny,D.M., Lu,J., Lu,F., Lilley,C.E., Spanos,S., Malley,T. and Gibbs,R.A.

TITLE A gene-rich cluster between the CD4 and triosephosphate isomerase genes at human chromosome 12p13

JOURNAL Genome Res. 6 (4), 314-326 (1996)

PUBMED [8723724](#)

REFERENCE 37 (residues 1 to 340)

AUTHORS Levine,M.A., Smallwood,P.M., Moen,P.T. Jr., Helman,L.J. and Ahn,T.G.

TITLE Molecular cloning of beta 3 subunit, a third form of the G protein beta-subunit polypeptide

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)

PUBMED [2107550](#)

COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from [U47924.1](#).

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit.

These subunits are encoded by families of related genes. This gene encodes a beta subunit. Beta subunits are important regulators of alpha subunits, as well as of certain signal transduction receptors and effectors. A single-nucleotide polymorphism (C825T) in this gene is associated with essential hypertension and obesity. This polymorphism is also associated with the occurrence of the splice variant GNB3-s, which appears to have increased activity. GNB3-s is an example of alternative splicing caused by a nucleotide change outside of the splice donor and acceptor sites. Additional splice variants may exist for this gene, but they have not been fully described.

```
FEATURES             Location/Qualifiers
    source             1..340
                        /organism="Homo sapiens"
                        /db_xref="taxon:9606"
                        /chromosome="12"
                        /map="12p13"
    Protein           1..340
                        /product="guanine nucleotide-binding protein, beta-3
                        subunit"
                        /note="guanine nucleotide-binding protein G(I)/G(S)/G(T)
                        beta subunit 3; GTP-binding regulatory protein beta-3
                        chain; transducin beta chain 3; G protein, beta-3 subunit"
    CDS              1..340
                        /gene="GNB3"
                        /coded_by="NM_002075.2:406..1428"
                        /note="go_component: heterotrimeric G-protein complex
                        [goid 0005834] [evidence IEA];
                        go_function: GTPase activity [goid 0003924] [evidence TAS]
                        [pmid 9425898];
                        go_function: signal transducer activity [goid 0004871]
                        [evidence IEA];
                        go_process: signal transduction [goid 0007165] [evidence
                        IEA];
                        go_process: regulation of blood pressure [goid 0008217]
                        [evidence TAS] [pmid 9425898];
                        go_process: G-protein coupled receptor protein signaling
                        pathway [goid 0007186] [evidence IEA];
                        go_process: G-protein coupled receptor protein signaling
                        pathway [goid 0007186] [evidence TAS] [pmid 2107550]"
                        /db_xref="GeneID:2784"
                        /db_xref="LocusID:2784"
                        /db_xref="MIM:139130"
```

ORIGIN

```
1  mgemeqlrqe aeqlkkqiad arkacadvtl aelvsglevv grvqmrtrrt lrghlakiya
61  mhwatdskll vsasqdgkli vwdsyttknv haiplrsswv mtcayapsgn fvacggldnm
121 csiynlksre gnvkvsrels ahtgylsccr flddnnivts sgdttcaldw ietgqqktvf
181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrq tftghesdin aicffpngea
241 ictgsddasc rlfdlradqe licfshesii cgitsvafsl sgrllfagyf dfncnvwdsm
301 kservgilsg hdnrvscldgv tadgmavatk swdsflkiwn
```

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books

Search Protein for Go Clear

Limits

Preview/Index

History

Clipboard

Details

Display

default

Show: 20

Send to

File

Get Subsequence

Features

☐ 1: NP_067642. guanine nucleotid...[gi:11055998]

BLink, Domains, Links

LOCUS NP_067642 340 aa linear PRI 21-DEC-2003

DEFINITION guanine nucleotide-binding protein, **beta-4** subunit; guanine nucleotide binding protein beta subunit 4; G protein beta-4 subunit [Homo sapiens].

ACCESSION NP_067642

VERSION NP_067642.1 GI:11055998

DBSOURCE REFSEQ: accession [NM_021629.2](#)

KEYWORDS .

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Roskopf,D., Nikula,C., Manthey,I., Joisten,M., Frey,U., Kohnen,S. and Siffert,W.

TITLE The human G protein beta4 subunit: gene structure, expression, Ggamma and effector interaction

JOURNAL FEBS Lett. 544 (1-3), 27-32 (2003)

PUBMED [12782285](#)

REMARK GeneRIF: Gbeta4 is widely expressed, located on chromosome 3 with a genomic structure like Gbeta1 to Gbeta3, but different from Gbeta5

REFERENCE 2 (residues 1 to 340)

AUTHORS Huang,L., Max,M., Margolskee,R.F., Su,H., Masland,R.H. and Euler,T.

TITLE G protein subunit G gamma 13 is coexpressed with G alpha o, G beta 3, and G beta 4 in retinal ON bipolar cells

JOURNAL J. Comp. Neurol. 455 (1), 1-10 (2003)

PUBMED [12454992](#)

REMARK GeneRIF: Gbeta4 subunit is coexpressed in physiologically ON-type cone bipolar cells with Ggamma13 and Gbeta3 but is not present in OFF-type bipolar cells.

REFERENCE 3 (residues 1 to 340)

AUTHORS Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and Lonigro,A.J.

TITLE The role of G protein beta subunits in the release of ATP from human erythrocytes

JOURNAL J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)

PUBMED [12512701](#)

REFERENCE 4 (residues 1 to 340)

AUTHORS Ruiz-Velasco,V., Ikeda,S.R. and Puhl,H.L.

TITLE Cloning, tissue distribution, and functional expression of the human G protein beta 4-subunit

JOURNAL Physiol. Genomics 8 (1), 41-50 (2002)

PUBMED [11842130](#)

REFERENCE 5 (residues 1 to 340)

AUTHORS Downes,G.B. and Gautam,N.

TITLE The G protein subunit gene families

JOURNAL Genomics 62 (3), 544-552 (1999)

PUBMED [10644457](#)

COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from [BC000873.1](#), [AK001890.1](#) and [AK022599.1](#).

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit. These subunits are encoded by families of related genes. This gene encodes a beta subunit. Beta subunits are important regulators of alpha subunits, as well as of certain signal transduction receptors and effectors.

FEATURES

	Location/Qualifiers
source	1..340 /organism="Homo sapiens" /db_xref="taxon:9606" /chromosome="3" /map="3q27.1"
<u>Protein</u>	1..340 /product="guanine nucleotide-binding protein, beta-4 subunit" /note="guanine nucleotide binding protein beta subunit 4; G protein beta-4 subunit"
<u>Region</u>	18..340 /region_name="G-protein beta subunit [General function prediction only]" /note="KOG0286" /db_xref="CDD:18082"
<u>CDS</u>	1..340 /gene="GNB4" /coded_by="NM_021629.2:281..1303" /note="go_component: heterotrimeric G-protein complex [goid 0005834] [evidence IEA]; go_function: signal transducer activity [goid 0004871] [evidence IEA]; go_function: heterotrimeric G-protein GTPase activity [goid 0003927] [evidence IEA]; go_process: G-protein coupled receptor protein signaling pathway [goid 0007186] [evidence IEA]; go_process: signal transduction [goid 0007165] [evidence IEA]" /db_xref="GeneID:59345" /db_xref="LocusID:59345"

ORIGIN

```
1 mseleqlrqe aeqlrnqiqd arkacndatl vqitsnmdsv grigmrtrrt lrghlakiya
61 mhwgydsrll vsasqdgkli iwsdyttknm haiplrsswv mtcayapsgn yvacggldni
121 csiynlktre gnvrvsrelp ghtgylsccr flddsquivts sgdtcalwd ietaqqtttf
181 tghsgdvmsl slspdmrtfv sgacdasskl wdirdgmcrcq sftghvsdin avsffpnyga
241 fatgsddatc rlfdlradqe lllyshdnii cgitsvafsk sgrlllagyd dfncnvwtdl
301 kgdragvlag hdnrvsclgv tddgmavatg swdsflriwn
```

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez

PubMed

Nucleotide

Protein

Genome

Structure

PMC

Taxonomy

Books

Search Protein



for

Go

Clear

Limits

Preview/Index

History

Clipboard

Details

Display

default



Show: 20

Send to

File



Get Subsequence

Features

☐ 1: NP_006569. guanine nucleotid...[gi:5729852]

BLink, Domains, Links

LOCUS NP_006569 353 aa linear PRI 21-DEC-2003

DEFINITION guanine nucleotide-binding protein, ~~beta-5~~ subunit ~~isoform a~~ G protein, beta-5 subunit; transducin beta chain 5; guanine nucleotide-binding protein, beta subunit 5L; G protein, beta subunit 5L [Homo sapiens].

ACCESSION NP_006569

VERSION NP_006569.1 GI:5729852

DBSOURCE REFSEQ: accession NM_006578.2

KEYWORDS

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 353)

AUTHORS Downes, G.B. and Gautam, N.

TITLE The G protein subunit gene families

JOURNAL Genomics 62 (3), 544-552 (1999)

PUBMED 10644457

REFERENCE 2 (residues 1 to 353)

AUTHORS Jones, P.G., Lombardi, S.J. and Cockett, M.I.

TITLE Cloning and tissue distribution of the human G protein beta 5 cDNA

JOURNAL Biochim. Biophys. Acta 1402 (3), 288-291 (1998)

PUBMED 9606987

COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from BC013997.2 and AF017656.1.

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit. These subunits are encoded by families of related genes. This gene encodes a beta subunit. Beta subunits are important regulators of alpha subunits, as well as of certain signal transduction receptors and effectors. Alternatively spliced transcript variants encoding different isoforms exist.

Transcript Variant: This variant (1) encodes the shorter isoform (a).

FEATURES

source

Location/Qualifiers

1..353

/organism="Homo sapiens"

/db_xref="taxon:9606"

/chromosome="15"

/map="15q21.1"

Protein

1..353

/product="guanine nucleotide-binding protein, beta-5 subunit isoform a"

/note="G protein, beta-5 subunit; transducin beta chain 5; guanine nucleotide-binding protein, beta subunit 5L; G protein, beta subunit 5L"

Region

9..353

/region_name="G-protein beta subunit [General function prediction only]"

CDS

/note="KOG0286"
/db_xref="CDD:18082"
1..353
/gene="GNB5"
/coded_by="NM_006578.2:87..1148"
/note="isoform a is encoded by transcript variant 1"
/db_xref="GeneID:10681"
/db_xref="LocusID:10681"
/db_xref="MIM:604447"

ORIGIN

1 mateglhene tlaslkseae slkgkleeer aklhdvelhq vaervealgq fvmktrrtlk
61 ghgnkvclmd wckdkrrivs ssqdgkvivw dsfttnkeha vtmpctwvma cayapsgcai
121 acggldnkcs vypltfdkne nmaakkkksva mhtnylsacs ftnsdmqilt asgdgtcalw
181 dvesgqllqs fhghgadvlc ldlapsetgn tfvsggcdkk amvwdmrsgq cvqafethes
241 dinsvryyps gdafasgsdd atcrlydlra drevaiyske siifgassvd fslsgrllfa
301 gyndytinvw dvlkgsrvsi lfghenrvst lrvspdgtaf csgswdhtlr vwa

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez

PubMed

Nucleotide

Protein

Genome

Structure

PMC

Taxonomy

Books

Search Protein



for

Go

Clear

Limits

Preview/Index

History

Clipboard

Details

Display

default

Show: 20

Send to

File

Get Subsequence

Features

☐ 1: NP_057278. guanine nucleotid...[gi:20336270]

BLink, Domains, Links

LOCUS NP_057278 395 aa linear PRI 21-DEC-2003

DEFINITION guanine nucleotide-binding protein, ~~beta-5~~ subunit ~~isoform b~~; G protein, beta-5 subunit; transducin beta chain 5; guanine nucleotide-binding protein, beta subunit 5L; G protein, beta subunit 5L [Homo sapiens].

ACCESSION NP_057278

VERSION NP_057278.2 GI:20336270

DBSOURCE REFSEQ: accession NM 016194.2

KEYWORDS

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 395)

AUTHORS Downes, G.B. and Gautam, N.

TITLE The G protein subunit gene families

JOURNAL Genomics 62 (3), 544-552 (1999)

PUBMED 10644457

REFERENCE 2 (residues 1 to 395)

AUTHORS Jones, P.G., Lombardi, S.J. and Cockett, M.I.

TITLE Cloning and tissue distribution of the human G protein beta 5 cDNA

JOURNAL Biochim. Biophys. Acta 1402 (3), 288-291 (1998)

PUBMED 9606987

COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from AF300650.1, AW967075.1 and BC013997.2.

On Apr 28, 2002 this sequence version replaced gi:7705367.

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit. These subunits are encoded by families of related genes. This gene encodes a beta subunit. Beta subunits are important regulators of alpha subunits, as well as of certain signal transduction receptors and effectors. Alternatively spliced transcript variants encoding different isoforms exist.

Transcript Variant: This variant (2) has two additional exons at its 5' end, but lacks the 5' portion of its third exon, compared to variant 1. It encodes an isoform (b) containing 42 additional amino acids at its N terminus compared to isoform a. This isoform is also referred to as beta subunit 5L.

FEATURES

source

Location/Qualifiers

1..395

/organism="Homo sapiens"

/db_xref="taxon:9606"

/chromosome="15"

/map="15q21.1"

Protein

1..395

/product="guanine nucleotide-binding protein, beta-5 subunit isoform b"

/note="G protein, beta-5 subunit; transducin beta chain 5;

guanine nucleotide-binding protein, beta subunit 5L; G
protein, beta subunit 5L"

Region

51..395

/region_name="G-protein beta subunit [General function
prediction only]"

/note="KOG0286"

/db_xref="CDD:18082"

CDS

1..395

/gene="GNB5"

/coded_by="NM_016194.2:66..1253"

/note="isoform b is encoded by transcript variant 2"

/db_xref="GeneID:10681"

/db_xref="LocusID:10681"

/db_xref="MIM:604447"

ORIGIN

```
.1 mcdqtflvnv fgscdkcfkq ralrpvfkks qqlsycstca eimateglhe netlaslkse
61 aeslkgklee eraklhovel hqvaerveal qqfvmktrrt lkghgnkvlc mdwckdkrri
121 vsssqdgkvi vwsdfttnke havtmpctwv macayapsgc aiacggldnk csvypltfdk
181 nenmaakkks vamhtnylsa csftnsdmqi ltagdgtca lwdvesgqll qsfhghgadv
241 lcldlapset gntfvsggcd kkamvwdmrs ggcqvafeth esdinsvryy psgdapasgs
301 ddatcrlydl radrevaiys kesiifgass vdfslsgrll fagyndytin vwdvlkgsrv
361 silfghenrv stlrvspdgt afcsgswdht lrvwa
```

//

[Disclaimer](#) | [Write to the Help Desk](#)

[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books

Search for

☐ 1: P16520. Guanine nucleotid...[gi:121011] BLink, Domains, Links

LOCUS P16520 340 aa linear PRI 15-MAR-2004

DEFINITION Guanine nucleotide-binding protein G(I)/G(S)/G(T) beta-subunit 3
(Transducin beta chain 3).

ACCESSION P16520

VERSION P16520 GI:121011

DBSOURCE swissprot: locus GBB3_HUMAN, accession P16520;
class: standard.
created: Aug 1, 1990.
sequence updated: Aug 1, 1990.
annotation updated: Mar 15, 2004.
xrefs: gi: 183412, gi: 306776, gi: 1633547, gi: 1732410, gi: 1208749, gi: 1208750, gi: 1934888, gi: 1934889, gi: 1934890, gi: 1934891, gi: 1934892, gi: 1934893, gi: 1934894, gi: 1934895, gi: 1934884, gi: 3954944, gi: 20257501, gi: 20257502, gi: 71873
xrefs (non-sequence databases): HSSPP04901, GenewHGNC:4400, MIM 139130, GO0003927, GO0007186, GO0008217, InterProIPR001632, InterProIPR001680, PfamPF00400, PRINTSPR00319, PRINTSPR00320, ProDomPD000018, SMARTSM00320, PROSITEPS00678, PROSITEPS50082, PROSITEPS50294

KEYWORDS Transducer; Repeat; WD repeat; Multigene family; Polymorphism.

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Levine,M.A., Smallwood,P.M., Moen,P.T. Jr., Helman,L.J. and Ahn,T.G.

TITLE Molecular cloning of beta 3 subunit, a third form of the G protein beta-subunit polypeptide

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)

MEDLINE 90192801

PUBMED 2107550

REMARK SEQUENCE FROM N.A.

REFERENCE 2 (residues 1 to 340)

AUTHORS Ansari-Lari,M.A., Muzny,D.M., Lu,J., Lu,F., Lilley,C.E., Spanos,S., Malley,T. and Gibbs,R.A.

TITLE A gene-rich cluster between the CD4 and triosephosphate isomerase genes at human chromosome 12p13

JOURNAL Genome Res. 6 (4), 314-326 (1996)

MEDLINE 96303695

PUBMED 8723724

REMARK SEQUENCE FROM N.A.

REFERENCE 3 (residues 1 to 340)

AUTHORS Busch,S., Dyhr,W. and Siffert,W.

TITLE Direct Submission

JOURNAL Submitted (~APR-1997)

REMARK SEQUENCE FROM N.A.

REFERENCE 4 (residues 1 to 340)

AUTHORS Puhl,H.L. III, Ikeda,S.R. and Aronstam,R.S.

TITLE Direct Submission

JOURNAL Submitted (~MAR-2002)

REMARK SEQUENCE FROM N.A.

TISSUE=Brain

COMMENT

This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. The original entry is available from <http://www.expasy.ch/sprot> and <http://www.ebi.ac.uk/sprot>

[FUNCTION] Guanine nucleotide-binding proteins (G proteins) are involved as a modulator or transducer in various transmembrane signaling systems. The beta and gamma chains are required for the GTPase activity, for replacement of GDP by GTP, and for G protein-effector interaction.

[SUBUNIT] G proteins are composed of 3 units, alpha, beta and gamma.

[SIMILARITY] Contains 7 WD repeats.

FEATURES

	Location/Qualifiers
source	1..340 /organism="Homo sapiens" /db_xref="taxon:9606"
gene	1..340 /gene="GNB3"
Protein	1..340 /gene="GNB3" /product="Guanine nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 3"
Region	53..83 /gene="GNB3" /region_name="Repetitive region" /note="WD 1."
Region	76 /gene="GNB3" /region_name="Variant" /note="D -> N (in dbSNP:2234756). /FTId=VAR_014756."
Region	95..125 /gene="GNB3" /region_name="Repetitive region" /note="WD 2."
Region	141..170 /gene="GNB3" /region_name="Repetitive region" /note="WD 3."
Region	182..212 /gene="GNB3" /region_name="Repetitive region" /note="WD 4."
Region	224..254 /gene="GNB3" /region_name="Repetitive region" /note="WD 5."
Region	268..298 /gene="GNB3" /region_name="Repetitive region" /note="WD 6."
Region	272 /gene="GNB3" /region_name="Variant" /note="G -> S (in dbSNP:5442). /FTId=VAR_014757."
Region	310..340 /gene="GNB3" /region_name="Repetitive region" /note="WD 7."
Region	339

/gene="GNB3"
/region_name="Variant"
/note="W -> L (in dbSNP:5444). /FTId=VAR_014758."

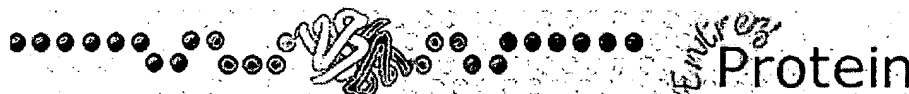
ORIGIN

```
1 mgemeqlrqe aeqlkkqiad arkacadvtl aelvsglevv grvqmrtrrt lrghlakiya
61 mhwatdskll vsasqdgkli vwdsyttknv haiplrsswv mtcayapsgn fvacggldnm
121 csiynlksre gnvkvsrels ahtgylsccr flddnnivts sgdttcaldw ietgqqktvf
181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrg tftghesdin aicffpngea
241 ictgsddasc rlfdlradqe licfshesii cgitsvafsl sgrllfagyf dfncnvwdsm
301 kservgilsg hdnrvsclgv tadgmavatg swdsflkiwn
```

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books

Search **Protein** for

Show: 20

☐ 1: RGHUB3. GTP-binding regul...[gi:71873]

[BLink](#), [Domains](#), [Links](#)

LOCUS RGHUB3 340 aa linear PRI 22-JUN-1999
 DEFINITION GTP-binding regulatory protein **beta-3** chain - human.
 ACCESSION RGHUB3
 VERSION RGHUB3 GI:71873
 DBSOURCE pir: locus RGHUB3;

summary: #length 340 #molecular-weight 37221 #checksum 5483
 ;
 genetic: #gene GDB:GNB3 ##cross-references GDB:120005; OMIM:139130
 #map_position 12p13-12p13
 ;
 superfamily: GTP-binding regulatory protein beta chain; WD repeat
 homology
 ;
 PIR dates: 31-Dec-1992 #sequence_revision 31-Dec-1992 #text_change
 22-Jun-1999

KEYWORDS GTP binding; heterotrimer; signal transduction.

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Levine, M.A., Smallwood, P.M., Moen, P.T. Jr., Helman, L.J. and
 Ahn, T.G.

TITLE Molecular cloning of beta 3 subunit, a third form of the G protein
 beta-subunit polypeptide

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)

MEDLINE 90192801

PUBMED 2107550

COMMENT The G proteins are a family of guanine nucleotide-binding proteins
 that relay signals from cell surface receptors to intracellular
 effectors; they are composed of alpha, beta, and gamma chains. The
 beta and gamma chains, required for GTPase activity, appear to be
 common to all G proteins. The alpha chain contains the guanine
 nucleotide binding site and serves to activate phosphodiesterase;
 it is specific for each type of G protein.
 In mammals, four distinct types of beta chains have been found.

FEATURES

source Location/Qualifiers

1..340

/organism="Homo sapiens"

/db_xref="taxon:9606"

Protein 1..340

/product="GTP-binding regulatory protein beta-3 chain"

/note="guanine nucleotide binding protein beta-3 chain;
 heterotrimeric G-protein beta-3 chain; transducin beta-3
 chain"

Region 51..84

/region_name="domain"

/note="WD repeat homology #label WD1"

Region 88..126

/region_name="domain"

Region /note="WD repeat homology #label WD2"
139..171
/region_name="domain"
Region /note="WD repeat homology #label WD3"
180..213
/region_name="domain"
Region /note="WD repeat homology #label WD4"
222..255
/region_name="domain"
Region /note="WD repeat homology #label WD5"
263..299
/region_name="domain"
Region /note="WD repeat homology #label WD6"
308..340
/region_name="domain"
/note="WD repeat homology #label WD7"

ORIGIN

1 mgemeqlrge aeqllkkqiad arkacadvtl aelvsglevv grvqmrtrrt lrghlakiya
61 mhwatdskll vsasqdgkli vwdsyttknv haiplrsswv mtcayapsgn fvacggldnm
121 csiynlksre gnvkvsrels ahtgylsccr flddnnivts sgdttcaldw ietgqqktvf
181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrc tftghesdin aicffpngea
241 ictgsddasc rlfldlrade licfshesii cgitsvafsl sgrllfagyf dfncnvwdsd
301 kservgilsg hdnrvscldg tadgmavatt swdsflkiwn

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books

Search Protein for Go Clear

Limits Preview/Index History Clipboard Details
Display default Show: 20 Send to File Get Subsequence Features

1: AAF04308. G protein beta su...[gi:6120137]

BLink, Domains, Links

LOCUS AAF04308 230 aa linear PRI 27-OCT-1999

DEFINITION G protein beta subunit [Homo sapiens].

ACCESSION AAF04308

VERSION AAF04308.1 GI:6120137

DBSOURCE locus AF195883 accession AF195883.1

KEYWORDS

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 230)

AUTHORS Ramachandiran, S., Lau, S.S. and Monks, T.J.

TITLE A novel G protein beta subunit (G beta 6) in human promyelocytic leukemia (HL-60) cells

JOURNAL Unpublished

REFERENCE 2 (residues 1 to 230)

AUTHORS Ramachandiran, S., Lau, S.S. and Monks, T.J.

TITLE Direct Submission

JOURNAL Submitted (18-OCT-1999) Pharmacology & Toxicology, The University of Texas at Austin, College of Pharmacy, Austin, TX 78712, USA

COMMENT Method: conceptual translation supplied by author.

FEATURES

Location/Qualifiers

source

1..230

/organism="Homo sapiens"

/db_xref="taxon:9606"

/cell_line="HL-60"

/cell_type="promyelocytic leukemia cells"

Protein

<1..230

/product="G protein beta subunit"

/name="G beta 6; G beta-like protein; guanine nucleotide binding protein"

CDS

1..230

/coded_by="AF195883.1:<1..693"

ORIGIN

```
1 grwmytgged ctariwdlrs rnlqcqrifq vnapincvcl hpnqaelivg dqsgaihiwd
61 lktdhneqli pepevsitsa hidpdasyma avnstgncyv wnlgtggigde vtqlipktki
121 pahtryalqc rfspdstilll tcsadtckki wrtsnfsmlt elsiksgnpg essrgwmwgc
181 afsgdsqyiv tassdnlarl wcvetgeikr eygghqkavv clafndsvlg
```

//

Disclaimer | Write to the Help Desk
NCBI | NLM | NIH

Aug 4 2004 12:36:34



Entrez PubMed Nucleotide Protein Genome Structure PMC Taxonomy

Search Protein for Go Clear

Limits Preview/Index History Clipboard Details
Display default Show: 20 Send to File Get Subsequence Features☐ 1: AAA52582. guanine nucleotid...[gi:306776]

BLink, Domains, Links

LOCUS AAA52582 340 aa. linear PRI 08-NOV-1994

DEFINITION guanine nucleotide binding protein beta-3 subunit.

ACCESSION AAA52582

VERSION AAA52582.1 GI: [REDACTED]

DBSOURCE locus HUMGNBPB3 accession M31328.1

KEYWORDS

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Levine, M.A., Smallwood, P.M., Moen, P.T. Jr., Helman, L.J. and
Ahn, T.G.TITLE Molecular cloning of beta 3 subunit, a third form of the G protein
beta-subunit polypeptide

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)

MEDLINE 90192801

PUBMED 2107550

COMMENT On Jul 26, 1993 this sequence version replaced gi:183413.
Draft entry and computer-readable sequence for [1] kindly submitted
by M.A. Levine, 17-JAN-1990, for release after publication.
Method: conceptual translation.

FEATURES Location/Qualifiers

source	1..340
	/organism="Homo sapiens"
	/db_xref="taxon:9606"
	/map="12p13"
Protein	1..340
	/name="guanine nucleotide binding protein beta-3 subunit"
CDS	1..340
	/gene="GNB3"
	/coded_by="M31328.1:7..1029"
	/db_xref="GDB:G00-120-005"

ORIGIN

```
1 mgemeqlrqe aeqlkkqiad arkacadvtl aelvsglevv grvqmrtrrt lrglhakiya
61 mhwatdskll vsasqdgkli vwdsyttknv haiplrsswv mtçayapsgn fvacggldnm
121 csiynlksre gnvkvsrels ahtgylsccr flddnivts sgdtcalwd ietgqqktvf
181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrq tftghesdin aicffpngea
241 ictgsddasc rlfdlradqe licfshesii cgitsvafsl sgrllfagyd dfncnvwdsm
301 kservgilsg hdnrvscigv tadgmavatg swdsflkiwn
```

//

Disclaimer | Write to the Help Desk
NCBI | NLM | NIH

Aug 4 2004 12:36:34



Entrez

PubMed

Nucleotide

Protein

Genome

Structure

PMC

Taxonomy

Books

Search for

Go

Clear

Limits

Preview/Index

History

Clipboard

Details

Display

default

Show: 20

Send to

File

Get Subsequence

Features

☐ 1: AAA35922. G protein beta su...[gi:306785]

BLink, Domains, Links

LOCUS AAA35922 340 aa linear PRI 11-JUN-1993

DEFINITION G protein beta subunit.

ACCESSION AAA35922

VERSION AAA35922.1 GI:306785

DBSOURCE locus HUMGP accession M16538.1

KEYWORDS .

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 340)

AUTHORS Gao,B., Gilman,A.G. and Robishaw,J.D.

TITLE A second form of the beta subunit of signal-transducing G proteins

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 84 (17), 6122-6125 (1987)

MEDLINE 87317607

PUBMED 3114742

COMMENT On Jul 26, 1993 this sequence version replaced gi:183447.
Draft entry and printed copy of sequence [1] kindly provided by B.Gao, 13-JUL-1987.
Method: conceptual translation.

FEATURES

Location/Qualifiers

source 1..340

/organism="Homo sapiens"

/db_xref="taxon:9606"

Protein 1..340

/name="G protein beta subunit"

CDS 1..340

/coded_by="M16538.1:148..1170"

ORIGIN

```

1 mseleqlrge aeqlrnqird arkacgdstl tqitagldpv griqmtrrrt lrghlakiya
61 mhwgtdsrll vsasqdgkli iwsdytnkv haiprrsswv mtcayaxsgn fvacggldni
121 csiyslktre gnvrvsrelp ghtgylsccr fldnqiits sgdtcalwd ietgqqtvgf
181 aghsgdvmsl slapngrtfv sgacdasikl wdvrdsmerq tfighesdin avaffpngya
241 fttgsddatc rlfdlradqe llmyshdnii cgitsvafsr sgrlllagyd dfncniwdam
301 kgdragvlag hdnrvscigv tddgmavatg swdsflkiwn

```

//

[Disclaimer](#) | [Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)

Aug 4 2004 12:36:34

Align two sequences

Thu Aug 19 22:31:12 BST 2004

```
/usr/tmp/seq1.133364.sca : 340 aa
>beta 3, 340 bases, 90F662BB checksum.          340 aa vs.
>beta 5, 395 bases, 8FDD2613 checksum.          395 aa
scoring matrix: , gap penalties: -12/-2
45.3% identity;      Global alignment score: 1137
```

```

                                     10
/usr/t MGE-----MEQLRQE
: . . . . .
beta  MCDQTFLVNVFGSCDKCFKQRALRPVFKKSQQLSYCSTCAEIMATEGLHENETLASLKSE
      10      20      30      40      50      60

      20      30      40      50      60      70
/usr/t AEQLKKQIADARKACADVTLAELVSGLEVVGVRVQMRTRRTLGRHLAKIYAMHWATDSKLL
: . . . . .
beta  AESLKGKLEEERAKLHDVELHQVAERVEALGQFVMKTRRTLKGHGKVLKMDWCKDKRRI
      70      80      90      100     110     120

      80      90      100     110     120
/usr/t VSASQDGKLIWDSYTTNKVHAIPLRSSWVMTCAAYAPSGNFVACGGLDNMCSIYNLK-SR
: . . . . .
beta  VSSSQDGKVIWDSFTTNKEHAVTMPCTWVMACAYAPSGCAIACGGLDNKCSVYPLTFDK
      130     140     150     160     170     180

      130     140     150     160     170     180
/usr/t EGNVKVSRE-LSAHTGYLSCCRFLD-DNNIVTSSGDTTCALWDIETGQKTVFVGHTGD-
: . . . . .
beta  NENMAAKKKSVMHTNYLSACSFTNSDMQILTASGDGTCALWDVESGQLLQSFHGHGADV
      190     200     210     220     230     240

      190     200     210     220     230     240
/usr/t -CMSLAVSPDFNLFISGACDASAKLWDVREGTCRQTFTGHESDINAICFFPNGEAICTGS
: . . . . .
beta  LCLDLAPSETGNTFVSGGCDKKAMVWDMRSGQCVQAFETHESDINSVRYPPSGDAFASGS
      250     260     270     280     290     300

      250     260     270     280     290     300
/usr/t DDASCRLFDLRADQELICFSHESIICGITSVAFSLSGRLLFAGYDDFNCNVWDSMKSERV
: . . . . .
beta  DDATCRLYDLRADREVAIYSKESIIFGASSVDFSLSGRLLFAGYNDYTINVWDVLKGSRV
      310     320     330     340     350     360

      310     320     330     340
/usr/t GILSGHDNRVSCLGVTADGMAVATGSWDSFLKIWN
: . . . . .
beta  SILFGHENRVSTLRVSPDGTAFCSGSWDHTLRVWA
      370     380     390
```

Elapsed time: 0:00:00